3.3.6.3 Oak Woodland

3.3.6.3.1 Community Overview

The oak woodland community occupies a position on the vegetation continuum that is intermediate between the oak savannas (especially oak openings) and the oak forests (especially southern dry forest). Oak woodland differs from oak savanna types in the limb architecture of its trees (which are **not** characterized by wide, spreading crowns over short thick boles), and greater crown closure (with an approximate range of 50% to as much as 95%). As presently understood, the latter attribute is not simply the result of the canopy closure that affected most savannas following the implementation of wildfire suppression policies earlier in the twentieth century. As soon as fire suppression policies were widely implemented in southern Wisconsin, the rapid proliferation of shrubs and saplings would have quickly altered stand structure, causing the open understories of the oak woodland communities to disappear. Describing the differences between woodland and forest is difficult because of the absence of intact reference stands, but the oak woodland was subjected to frequent (annual) wildfires of low intensity, lacked the dense woody understory that characterizes most oak forests, and often had relatively lower canopy closure than true forest.

Dominant trees included white oak, bur oak, and black oak, sometimes mixed with red oak and shagbark hickory. The denser growth of trees did not allow for the exaggerated crown spread demonstrated by oaks in true savannas (which in a natural state would usually exhibit less than 50% canopy cover). Under a characteristic fire regime, shrub and sapling representation in oak woodlands would be minimal. The herb layer is potentially diverse, including some members of the prairie, oak savanna, and oak forest communities, but also featuring grasses, legumes, composites and other forbs that are best adapted to light conditions of high filtered shade. Representative herbs are thought to include upland boneset, violet bush-clover, Virginia bush-clover, Culver's-root, rough-leaved sunflower, Eastern shooting-star, Short's aster, pimpernel, bottlebrush grass, silky wild-rye, and bracted tick-trefoil.

Many of the same plants and animals that reach their optimal abundance in the oak openings also occur in oak woodland, including red-headed woodpecker, orchard oriole, eastern bluebird, and kittentails. Oak woodland can also support forest species, such as yellow-throated vireo, scarlet tanager, tufted titmouse, and blue-gray gnatcatcher, and in large stands, some species that are restricted to forest interior conditions, such as the cerulean warbler.

The geographic range historically occupied by oak woodland would be virtually the same as that of oak openings and prairies in southern Wisconsin. Oak woodland would have been most common on sites that experienced frequent, low-intensity ground fires. Moisture conditions would have included dry, dry-mesic, mesic, and, possibly, wet-mesic sites. Today oak woodland is most likely to occur in those parts of southern Wisconsin that continue to support relatively large areas of natural vegetation that include prairie and savanna remnants in proximity to oak-dominated forests. Portions of the Driftless Area, the kettle interlobate moraine of southeastern Wisconsin, and perhaps portions of the Central Sand Hills, offer the best potential. This type is extraordinarily rare today.

3.3.6.3.2 Vertebrate Species of Greatest Conservation Need Associated with Oak Woodland

Seventeen vertebrate Species of Greatest Conservation Need were identified as moderately or significantly associated with oak woodland (Table 3-139).

Table 3-139. Vertebrate Species of Greatest Conservation Need that are (or historically were) moderately or significantly associated with oak woodland communities.

Species Significantly Associated with Oak Woodland
Birds
Whip-poor-will
Red-headed Woodpecker
Herptiles
Ornate Box Turtle
Black Ratsnake
Bullsnake
Timber Rattlesnake
Mammals
Woodland Vole
Species Moderately Associated with Oak Woodland
Birds
Wood Thrush
Blue-winged Warbler
Cerulean Warbler
Herptiles
Wood Turtle
Blanding's Turtle
Northern Prairie Skink
Prairie Ringneck Snake
Mammals
Northern Long-eared Bat
Eastern Red Bat
Franklin's Ground Squirrel

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-139 were subject to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both oak woodland and associated vertebrate Species of Greatest Conservation Need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for protection, restoration, and/or management of oak woodland in each of the Ecological Landscapes (Tables 3-140 and 3-141).

- Using the analysis described above, a species was further selected if it had both a significant association with oak woodland and a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of oak woodland. These species are shown in Figure 3-32.

Table 3-140. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with oak woodland communities and their association with Ecological Landscapes that support oak woodland.

Oak Woodland	Birds (2)*		Herptiles (4)				Mammals (1)
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Whip-poor-will	Red-headed Woodpecker	Ornate Box Turtle	Black Rat Snake	Bullsnake	Timber Rattlesnake	Woodland Vole
MAJOR							
Southeast Glacial Plains							
Southwest Savanna							
Western Coulee and Ridges							
IMPORTANT							
Western Prairie							
PRESENT (MINOR)							
Central Sand Hills							
Central Sand Plains							
Southern Lake Michigan Coastal							

Color Key

= **HIGH probability the species occurs in this Ecological Landscape**

= **MODERATE probability the species occurs in this Ecological Landscape**

= **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Table 3-141. Vertebrate Species of Greatest Conservation Need that are (or historically were) *moderately* associated with oak woodland communities and their association with Ecological Landscapes that support oak woodland.

Oak Woodland	Birds (3)*			Herptiles (4)				Mammals (3)		
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Wood Thrush	Blue-winged Warbler	Cerulean Warbler	Wood Turtle	Blanding's Turtle	Northern Prairie Skink	Prairie Ringneck Snake	Northern Long-eared Bat	Eastern Red Bat	Franklin's Ground Squirrel
MAJOR										
Southeast Glacial Plains	■	■	■		■			□	□	■
Southwest Savanna	□	□			■		■	□	□	□
Western Coulee and Ridges	■	■	■	■	■	■	■	■	□	□
IMPORTANT										
Western Prairie	■	■	□	■	■	■				□
PRESENT (MINOR)										
Central Sand Hills	■	■	■		■			□	□	■
Central Sand Plains	■	■	□	■	■		□	□	□	■
Southern Lake Michigan Coastal	■	□			■					■

Color Key

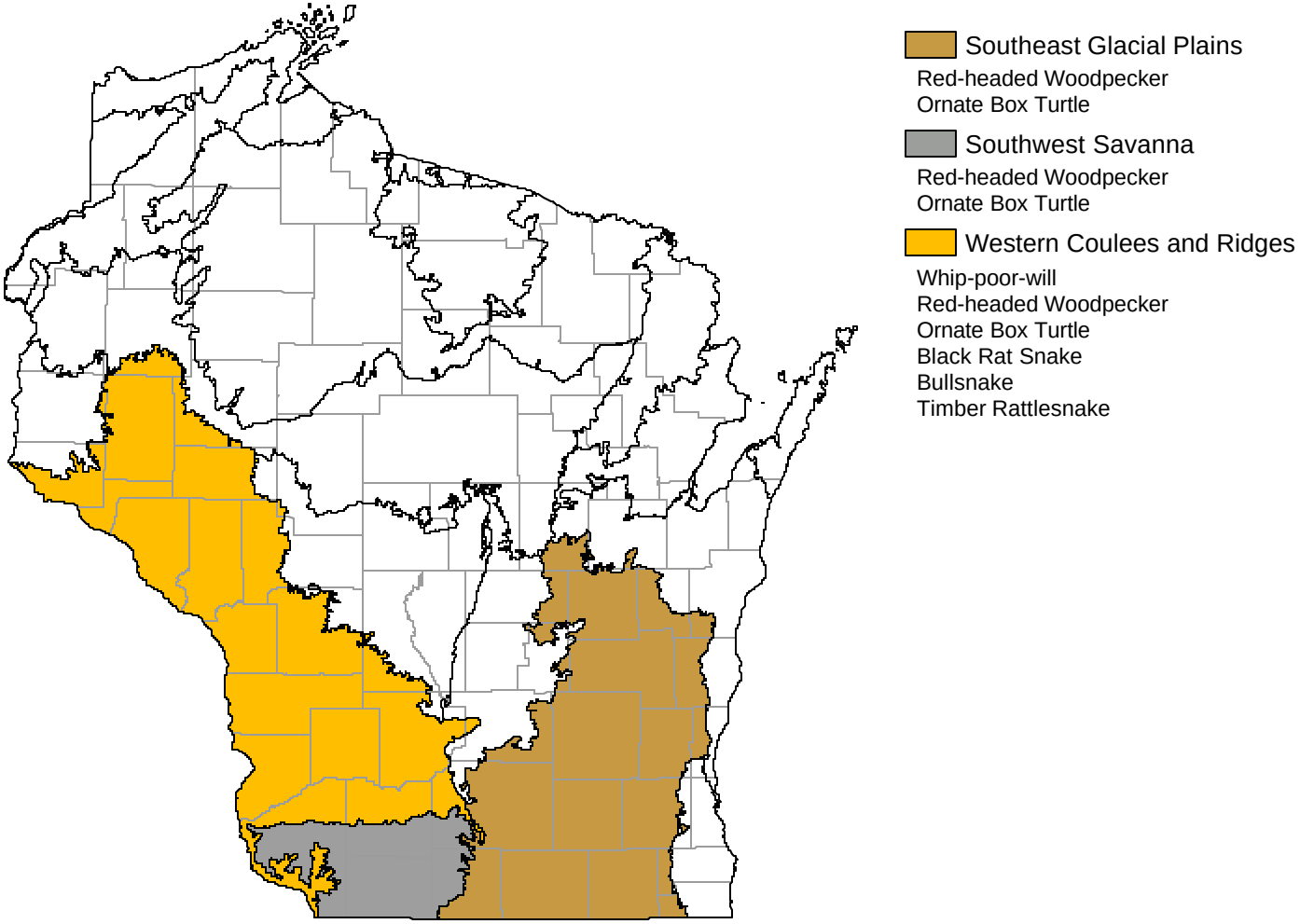
■ = **HIGH probability the species occurs in this Ecological Landscape**

□ = **MODERATE probability the species occurs in this Ecological Landscape**

□ = **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Figure 3-32. Vertebrate Species of Greatest Conservation Need that have *both* a significant association with oak woodland *and* a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of oak woodland.



3.3.6.3.3 Threats and Priority Conservation Actions for Oak Woodland

3.3.6.3.3.1 Statewide Overview of Threats and Priority Conservation Actions for Oak Woodland

The following list of threats and priority conservation actions were identified for oak woodland in Wisconsin. The threats and priority conservation actions described below apply to all of the Ecological Landscapes in Section 3.3.6.3.3.2 unless otherwise indicated.

Threats and Issues

- Lack of information on this type is a major threat, as management that would be appropriate for either a savanna or oak forest would not maintain all of an oak woodland's distinctive attributes.
- The few existing occurrences are small, overgrown, and often isolated.
- Composition and structure have been altered by long periods of fire suppression, resulting in serious encroachment by woody species.
- Lack of fire is a major threat; however, intense and/or frequent burning may have negative impacts on fire-sensitive invertebrates or other species (e.g., when habitat remnants are small, isolated, topographically uniform, and have very high fuel loads).
- Invasive plants such as exotic buckthorns, honeysuckles, garlic mustard, and multiflora rose are major threats throughout southern Wisconsin.
- Grazing can eliminate sensitive native understory plant species and encourage the spread of invasives, including thorny shrubs such as the native prickly ash.
- Gypsy moth may impact oaks in this community type.
- High deer populations may be impacting native understory species.
- Rural housing developments can cause fragmentation of restorable stands and limit options for prescribed burning.
- Small patch size may be a problem for some species that potentially use oak woodlands; more research is needed on the range of patch sizes needed to maintain the full complement of animals associated with this and related types.
- Unsustainable forest community management practices such as high grading or removing open-grown oaks as non premier lumber trees is detrimental to this community.
- Conflicts may exist in some areas with forest or grassland management objectives.

Priority Conservation Actions

- This community type is as rare as the oak savannas that have all but disappeared from Wisconsin's landscape. Conservation will depend largely on restoration. Information is scarce and the type is so rare that it is difficult to conduct in-depth studies over long time periods. Research and experimentation will be critical to enable the development of effective restoration and management techniques.
- Demonstration sites are needed to showcase examples of the community, appropriate management, and the context within which this community occurs.
- More survey work is needed to identify the locations of restorable sites. Guidelines that would help inventory staff and managers identify potential oak woodland occurrences are also needed.
- Survey efforts for new sites should include the Central Sand Hills and the Central Sand Plains Ecological Landscapes as well as those listed at the end of this chapter.
- Oak woodland requires active management, and it's doubtful that any means other than prescribed fire would be effective in minimizing shrub and sapling cover while encouraging the growth of native grasses and forbs.
- Oak woodland should be managed in the context of dry oak forest, oak savanna, and grasslands (including but not limited to native prairie).

- Develop educational tools and demonstration areas that promote benefits of prescribed fire, and address the public's liability concerns. Use demonstration areas for professional managers and the public, and develop a practical "toolkit" for regenerating oak at the appropriate time.
- Follow existing screening guidance for prescribed burning to minimize potentially negative impacts to sensitive species.
- Provide cost sharing incentives to land trusts and private landowners to burn and/or regenerate oak.
- Reduce deer density.
- Continue and support research to find biocontrols for invasives; control spread of new invasives.

3.3.6.3.3.2 Additional Considerations for Oak Woodland by Ecological Landscape

Special considerations have been identified for those Ecological Landscapes where major or important opportunities for protection, restoration, and/or management of oak woodland exist. Those considerations are described below and are in addition to the statewide threats and priority conservation actions for oak woodland found in Section 3.3.6.3.3.1.

Additional Considerations for Oak Woodland in Ecological Landscapes with ***Major*** Opportunities for Protection, Restoration, and/or Management of Oak Woodland

Southeast Glacial Plains

The Southern Unit of the Kettle Moraine State Forest offers some of the best management and restoration opportunities for oak openings and prairies in the upper Midwest. Oak woodland could be incorporated into savanna and prairie restoration projects, thereby providing a fuller representation of the variable conditions formerly characteristic of this region but also providing potentially viable habitat for some of the vulnerable "forest" species in this region. Other potential restoration and management sites occur within the joint TNC-WDNR Mukwonago River Watershed project (Walworth County).

Southwest Savanna

Some of the "pastured but never plowed" oak savanna sites that have been identified in this Ecological Landscape by WDNR Integrated Science Services staff may offer opportunities to restore and manage for savanna and oak woodland types. Additional survey work is needed to clarify the feasibility of initiating projects here.

Western Coulees and Ridges

There are many overgrown oak savanna remnants in this Ecological Landscape and restoration opportunities for both savanna and oak woodland are likely but not yet identified at the site level. Potential examples should be searched for on existing public lands such as Rush Creek Prairie State Natural Area (Crawford County), Fort McCoy Military Reservation (Monroe County), and Lower Chippewa River State Natural Area (Buffalo, Dunn, Trempealeau Counties).

Additional Considerations for Oak Woodland in Ecological Landscapes with ***Important*** Opportunities for Protection, Restoration, and/or Management of Oak Woodland

Western Prairie

Some of the Waterfowl Production Areas and Wildlife Areas in this Ecological Landscape (e.g., Oak Ridge Lake Waterfowl Production Area (St. Croix County) may offer restoration potential for this community type.